

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1-23. (cancelled)

24. (currently amended) An apparatus for transmitting data on a fiber channel, the apparatus comprising:

- an input that receives a digital signal to be transmitted;
- a convolutional coder disposed between the input and at least one symbol encoder;
- a plurality of symbol encoders that accept a portion of the signal received by the input, and encode the input into a symbol (S) and a complex conjugate of the symbol (S*);
- a 32-inverse fast Fourier \mathbb{T} transformer (32-IFFT) that receives S and S* signals and provides a digital output signals;
- a plurality of D/A converters for accepting the digital outputs from the 32-IFFT and for converting the accepted digital value to an analog value; and
- an analog multiplexer that samples the analog outputs from the plurality of digital to analog converters and combines them into an interleaved signal having successive values representative of the output of the plurality of digital to analog converters.

25. (currently amended) An apparatus for receiving data on a fiber channel, the apparatus comprising:

- an input that accepts an interleaved signal comprising a plurality of discrete successive values;
- a plurality of sample and hold circuits that accept the interleaved signal and extract a sample comprising a discrete value;
- a plurality of analog to digital converters that convert the discrete values from the plurality of sample and hold circuits to a plurality of digital values;
- a 32- \mathbb{T} inverse Fourier \mathbb{T} transform circuit that accepts said plurality of values from the plurality of analog to digital converters and converts said values into symbols (S) and complex conjugates of the symbols (S*);

A plurality of trellis decoders that accept said symbols (S) and said complex conjugates of the symbols (S*) and produced an uncoded output; and

an interface which accepts the outputs of said plurality of trellis decoders and combines them into a digital signal.

26. (new) An apparatus as in claim 24 wherein the input that receives a digital signal to be transmitted comprises a Gigabit Media Independent Interface (GMII).

27. (new) An apparatus as in claim 24 wherein the apparatus is integrated within a single integrated circuit.

28. (new) An apparatus as in claim 27 wherein the single integrated circuit is a complementary Metal Oxide Semiconductor (CMOS) integrated circuit.

29. (new) An apparatus as in claim 25 wherein the interface comprises a Gigabit Media Independent Interface (GMII).

30. (new) An apparatus as in claim 25 wherein the apparatus is integrated within a single integrated circuit.

31. (new) An apparatus as in claim 30 wherein the single integrated circuit is a complementary Metal Oxide Semiconductor (CMOS) integrated circuit.

32. (new) A method of transmitting data on a fiber channel, the method comprising:
convolutionally coding a digital signal to be transmitted with a plurality of convolutional coders to produce a plurality of convolutionally coded portions of the digital signal;
encoding the plurality of convolutionally coded portions of the digital signal into a plurality of symbols (S) and a plurality of complex conjugates of the symbols (S*);
performing an inverse Fourier transformation on the plurality of S and S* signals to produce a plurality of digital output signals;
converting the plurality of digital output signals to a plurality of analog signals; and
combining the plurality of analog signals into an interleaved signal having successive values representative of the plurality of analog signals.

33. (new) A method of processing data received from a fiber channel, the method comprising:
- receiving an interleaved signal comprising a plurality of discrete successive values;
 - extracting a plurality of samples from the interleaved signal, each sample comprising a discrete value;
 - converting the discrete values to a plurality of digital values;
 - performing an inverse Fourier transformation on the plurality of digital values to convert said values into symbols (S) and complex conjugates of the symbols (S*);
 - trellis decoding the symbols (S) and the complex conjugates of the symbols (S*) to produce a plurality of uncoded outputs; and
 - combining the plurality of uncoded outputs into a digital signal.